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ABSTRACT

One major responsibility of teachers preparing an optimal learning environment for young children is to provide many types of materials so that children, during the large blocks of exploration time provided each day, may choose for themselves how to elaborate their own skills in each area of development. In addition, teachers must select materials that can be used for helping children become familiar with routines and materials associated with activities presented in an instructional format. The principles for selecting materials for children of any age (including infants) and for any type of activity involve the following criteria: appropriateness (or developmental match), versatility, variety, safety, function, durability, and aesthetic qualities. (MP)

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PRESCHOOL LEARNING MATERIALS:

MAKING THE MATCH TO INDIVIDUAL SKILL LEVELS

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Materials for Learning

The resurgence of interest in child development and early childhood education that began in the early 1960's has resulted in a steady increase in manufacturers that are producing materials and equipment of every description for preschool and day care programs. The numbers of different catalogues that pile up on the desks of program directors from these proliferating toy producers is overwhelming. The vast array of materials described within these catalogues, all claiming to ensure child learning, can be at one and the same time, tempting, challenging, and bewildering. Perusal of the catalogues is sobering, too, for the cost of even simple, wooden puzzles on today's market can seem all but prohibitive to many a preschool or day care budget. Nevertheless, early learning centers must be equipped and refurbished; therefore, decisions must be made as to what to buy and what to have made, assuming skilled craftspeople and raw materials that are not in themselves prohibitively expensive can be found. Decisions must be made too, as to what to put on a "wish" list.

To ensure wise choices when making selections for a preschool classroom and play yard, teachers must know which materials and equipment are conducive to what kinds of learnings. Armed with that knowledge, they can provide children with a variety of opportunities for exploration that will result in children spontaneously contacting the learnings they need in all areas of development. Teachers' knowledge about materials stems from their essential elements that make a piece of material "right" for the classroom or play yard. These essential elements can be thought of in terms of appropriateness, versatility, variety, function, safety, durability, and appearance. Each of these elements will be examined in some detail.

Appropriateness

Appropriateness of the learning materials is based, in part, on arranging

a good developmental match for the varying age and skill levels of the children within the group. In preschool classrooms that follow a vertical grouping system where there may be as much as a three year age spread among the children, and in classrooms integrating handicapped children of diverse skills levels, the range of difficulty and complexity among materials will obviously need to be much greater than in a classroom composed of homogeneous groups of toddlers or four year olds. Thus, depending upon the range of skill levels, there need to be puzzles, for example, ranging from the very simple with only a few pieces (sometimes only one piece) to much more complex puzzles that may have as many as 25 or more pieces.

Classroom furnishings and the basic pieces of outdoor equipment need to be of an appropriate size and design for young children. Montessori taught long ago that tables and chairs need to be of a height that children's feet can rest squarely on the floor with their knees comfortably free under the table. Children's coat hanging arrangements need to be such that hooks are of the right height and designed in a way that garments "stay put" once children have hung them up. Furnishings for dramatic play should also be proportioned to the size of children, as should cupboards and open shelves housing children's free choice play materials. Cupboards and shelves should be no higher than 24 inches and should contain only materials that children are free to use. All other materials must be stored elsewhere with the clear understanding and consistently held rule that those are the teacher's cupboards (or shelves).

Of great importance in considering the appropriateness of a material is its sensory appeal. So many learnings in young children are through sensory motor experiences and contact with concrete materials. A material should invite a child to manipulate it, to climb upon it, to smell it, to experience it through one or more sensory modalities. Thus, for example, there should be

balls and dress up clothes and collage materials of various textures; blocks of many sizes and shapes; bright, clean, true-to-life colors for trucks and sand toys and puzzles; sound-making toys and instruments that are pleasing as to tone and intensity; creative materials that are wet, dry, maleable, or "tearable." Surfaces, both indoors and out, can be selected for sensory variety too. Some surfaces can be of formica, others of wood. There can be felt boards and chalkboards, big sift pillows to recline upon in the book area, and small pieces of carpet to be used as sit-upons for group time activities. Out of doors, climbing equipment can be of metal, wood, and rope with a soft resilient material such as tan bark underneath the climbers; adjacent grassy areas can be for rolling and tumbling and playing quiet games; all can be encircled perhaps by a concrete or macadam path for wheel toys.

Versatility

The best way to open this brief discussion of versatility seems to be by taking a few sentences to mention what not to invest in. Essentially the materials to be avoided are those that constrain behavioral variety in children. Color books, windup robots, costume or character dolls, battery driven race cars, manufactured slides, gliders, merry-go-rounds are prime examples of materials to be shunned.

Materials that have a potential for multiple usage by creative teachers and discovery-bent children are highly desirable. Invariably, these are materials that are simple in basic design and amenable to rearrangement without losing their structural integrity. A classic example is one of the most simple, time-honored and relatively inexpensive (by todays standards) of preschool materials--sets of one inch wooden cubes, each one either a primary or a secondary color. Teachers can use these cubes with children for counting games or color matching games; for teaching arithmetic sets (two blue, three yellow);

for patterning activities, simple and complex (first a red, now a purple, now a green--what comes next?); for translating one dimensional mosaic patterns into 3 dimensional block patterns; for having children "add" and "subtract"; all of this with a concrete material that children seem never to tire of manipulating.

Just as importantly, (perhaps even more importantly), children often discover all of the foregoing for themselves when spontaneously exploring the cubes during free play periods. They may line them up or stack them and then report "how many" they have; they invent patterns and mosaics of their own; and through their own manipulations they see a square of four cubes turn into a rectangle by adding two more. They even engage in a bit of reversibility by taking away those same two blocks, thus finding they again have made a square! Other uses to which children put these versatile wooden cubes are building fences and walls for small table toy creatures, decorating complex unit block structures, and constructing "furniture" in doll house play to mention but a few.

There are many such open-end materials, leggos, rig-a-jigs, unit blocks, giant tinker toys, to name but a few that are amenable to multiple usage even though seldom used that way. Lotto games are another good example; these games can be used not only to teach object matching but to teach a variety of verbal skills such as object naming, adjective and pronoun usage, sentence structure. Oftentimes such elaboration of language can be taught, too, through the teacher holding up the card, and asking a full question, "Who has the blue boat with the white sales." The children respond verbally, the complexity of the response depending upon the particular child's level of verbal development. Thus, during the same game one might hear a variety of exchanges ranging from simple to complex.

Teacher to one child: Who has the boat?

Child: I have the boat (child takes the card and puts it in place).

Teacher to another child: Who has the red balloons?

Child: I have the red balloons.

Teacher: How many red balloons: Let's count them.

Teacher and Child: One, two, three (child takes the card and puts it in place:.

Teacher to yet a different child: Who has the big brown dancing bear with the yellow umbrella?

A verbally skilled child to whom teachers would pose the foregoing question would be expected to phrase a similarly complex answer before the teacher handed the child the card for placement.

Posing varying levels of questions and requiring similarly varied responses provides all children in the game with a good match for their own skill level. At the same time, such an approach provides models at every level of complexity to subtly lead children on to take the next step. Important to mention, too, is that children, instead of the teacher, should be the "caller" in games such as a lotto on many occasions. Being the "teacher" is in itself a good learning experience for young children, one that usually prompts their best efforts and concentrated attention.

A variety of other teaching uses can also be found to which these simple, relatively inexpensive, yet highly versatile games such as lotto can be put. The teacher for example, can gather together all the small cards from one lotto game and have the children sort them into plastic meat trays labelled "What we

wear," "What we eat," "What we ride in." The teacher can pose riddles by looking at the large card and asking, "I'm thinking of something big and brown with a yellow umbrella. What is it?" The children then look at their array of cards to find the answer to the "riddle." Memory games with lotto cards are fun too. Three to six small cards can be put on a tray. The children name or describe each card, then the teacher puts a cover over the cards, rearranges them, withdraws one card and asks, "What's missing?" While these ideas merely scratch the surface of the many ways that the humble lotto and numerous other materials may be used by teachers and children in a variety of exciting learning experiences, they do point out important dimensions of what is meant by versatility in preschool materials.

Certain extremely valuable materials, many of Montessori design and origin are intended to be used in just one way--the "right" way--in order to preserve their carefully sequenced, self-correcting characteristics. The graded cylinders are but one example of such materials. It can be argued that children are having an entirely different perceptual motor learning experience when they line the cylinders up in order outside the form box or put together a wooden puzzle directly on the table rather than in the puzzle board. Deciding whether to let children use these didactic materials in ad lib fashion depends upon program philosophy and staff concensus.

Another type of versatility is found in those materials and pieces of equipment that do not dictate usage but instead motivate children to act and react in their own way and so control their own environment. Thus, a smooth 8 foot board, cleated at each end that prompts children to "invent" a slide of varying degrees of slope (depending on the height of the piece of equipment upon which it is hooked) is superior to a commercial slide that comes to be rarely used because of its static character. The same board

if cleated in the middle, can be centered on a sturdy saw horse to form a teeter-totter; it can be used as a walking board of varying heights; or a jumping board when hooked between two movable climbing frames. Two such boards side by side can be put up on hollow blocks to form an outdoor table while several such boards together form a shed roof for various kinds of hideaways. Equipment of the type that is moveable and lends itself to being combined and recombined in ways limited only by children's and teachers imagination should always be the preferred.

Variety

Young children need many different materials for learning and practicing the same types of skills. In order to foster fine motor development, for example, there should be many manipulative materials such as pegs and peg boards, puzzles and parquetry; tongs and paper punches and scissors; playdough, clay, and fingerpaint. Out-of-doors there should be wheel toys that require various kinds of large motor control on the part of the child--wheelbarrows, wagons, tricycles, and there should be various pieces of equipment for climbing, such as steps, ladders, and climbing frames.

An important factor in planning for variety is that the materials are such that they encourage the learning of skills in small steps--puzzles as mentioned earlier, of various levels of difficulty starting with simple one, two and three piece puzzles where each piece is a single object.

The same holds true for all of the other materials. A few examples follow:

- Varying sizes of wooden beads to string on laces of varying length and thickness.

- Pegs and pegboards: The task may be one of putting only five large one inch pegs in a small retangular board; or filling a larger square board with

one hundred matchstick-size pegs.

- Leggo sets of different sized pieces.

- Paint brushes that have thick, long handles and wide flat bristles; or finely tipped camel hair brushes (with other sizes in between).

- Walking and sliding boards that are short and wide, or much longer and narrower.

- Ladders of the gang plank variety with railings to hang on to; or ladders that are regular ladders of varying length requiring high level foot, hand and eye coordination.

- Balls of many sizes and for many skill development purposes--to kick, throw, roll, bounce.

The list could go on endlessly; the important point is that teachers do need access to a variety of materials which they can fit to the developing skill levels of the various children within the group.

Obviously, not all materials are made available to children all at the same time. Thus in the beginning of the school year, fewer materials of less complexity are offered so that children may be immediately successful and gain mastery over a basic range of materials. The materials that teachers put out in the beginning of school should be somewhat familiar to children coming to school for the first time, so that again, a good match is made--trucks, cars, dolls, dishes, dough and flour and rolling pins, crayons, balls, wagons, paints in the three primary colors--all have elements familiar to most children. Gradually, throughout the year, as the children's skills increase, teachers bring out materials of additional complexity and set out equipment reuqiring greater skill and daring. Thus a free hanging 8 foot rope ladder may not be brought out until late spring, even then it may be used only by a few of the more adventuresome, older children with two years of preschool behind them.

The finely tipped camel hair brushes may be brought out late in the school year too, for use perhaps by only a few of the highly skilled children. Teachers need not fear being accused of favoritism in instances like this, for another equally interesting painting project such as negative space painting at the easel (requiring less precision in fine motor skills) can also be available as a novelty experience for other children.

With this kind of selection and planning related to the use of materials and equipment throughout the preschool year children are continually "caught" by the novelty factor anchored in a "known" activity. Each is challanged to take the next steps along his or her own particular developmental continuum.

Safety and Hygeine

Other important concerns in selecting materials are safety and hygeine. Materials must be of good quality so that they are not easily broken, splintered or shattered. Examples of such materials are: Unit blocks of hardwood; housekeeping dishes of high quality plastic (or the alltime favorite, spun aluminum); jumping and walking boards of straight-grained resilient lumber; dolls with limbs well-jointed at shoulders and hips, and hair (if at all) truly washable and brushable.

Play materials must be inspected continuously for rough or splintery edges, sharp corners, and projecting parts. Oftentime poorly made toys such as cars and airplanes will loose a piece thus leaving hazardous edges or projections. The same is true of some of the chrystal-plastic table toys that break so readily thereby exposing dangerous sharp corners. Obviously materials of this type should be avoided.

Equipment also needs to be of a material that can be easily cleaned and refinished--good quality, heavy duty, waterproof material for paint aprons; children's chairs of a smooth rather than an orange peel finish plastic;

unit blocks of hardwood so they can be wiped clean with a damp cloth; table surfaces that do not stain. Anything that will not clean should be avoided such as the synthetic rubber-type puzzles and fit togethers. These materials, so attractive before use, lose their appeal almost immediately because they do not come clean even with scrubbing.

Certain materials are inherently dangerous on a preschool play yard--prime examples are commercial teeter-totters, gliders, merry-go-rounds, and slides. Young children are only beginning to learn to watch where they are going and to beware of the consequences of their own actions. They cannot predict what will happen "if" The teeter-totter serves as a good example. Many a small child has walked directly into a teeter-totter just as one end comes swiftly down. Many another young child has gotten off his or her end when it touched the ground totally unaware of the consequences for the child still in the air who may experience hurt or fright or both as the teeter-totter comes crashing to the ground.

Commercial slides are potentially dangerous too, not so much when used appropriately but rather when they are used inappropriately. And inappropriate usage often occurs because the "right" way of using the slide becomes so stultifying that children begin to invent more challenging ways to use the equipment, such as walking up the down way. Results? Accident or constant supervision and redirection by the teacher: "Slides are for sliding." Up the ladder; down the slide" which is just what some of the more adventuresome children are satiated with doing. A creative child is loathe to tolerate such tedium.

Durability

Because of the high cost of preschool equipment, durability is a key word when making selections. A wise decision is one that favors fewer materials of

higher quality that continue to be attractive over the years in spite of the hard wear that comes about through children's daily usage. One such example s the classic unit blocks of hardwood. These materials are expensive initially, but they are designed to stand up under generation after generation of childplay. Wheel toys are another good example - good quality metal tricycles may cost twice as much as plastic vehicles. The plastic vehicle, however, under heavy school usage (home usage is an entirely different matter) seldom hold up for an entire school year; the considerably more expensive tricycles, with careful maintenance will give four to seven years of service. The mention of careful maintenance brings up another aspect of durability, that of investing in materials and equipment that are repaintable, repairable, and for which replaceable parts are available. In general, the simpler the design and the less cluttered the finish, the more readily can equipment be refurbished by sanding and revarnishing or repainting.

When investing in special equipment such as record players, musical instruments, listening posts, and the various feedback language machines it is important that those not be so complex or so fragile that children cannot be taught to use them. There should be nothing at child level in the preschool that children have to be cautioned not to touch, or instructed, "Let the teacher do it." Those pieces of equipment that are too complex or delicate for children to use independently should be brought out only when a teacher can be in constant attendance and can instruct children how the equipment is to be handled if staff has been decided that children are to be allowed to use it. If such instruction and child-handling is not feasible the rule is firmly held that "only the teacher plays the guitar." Hopefully equipment of this type will represent only a small part of the equipment investment.

Utility

Closely related to durability is the utility or functional characteristics of materials purchased for children's use. Toy hammers, saws, rakes, shovels and the like will not work. Hammers and saws, in fact all tools, should be bought in a regular tool department. Hammers, for example, should have well-weighted heads and be well-balanced so that nails can be driven successfully; small hand saws should be of a type that can be sharpened periodically. Rakes and shovels with shorter handles, that nevertheless are not flimsy toys, can be purchased in well-stocked hardware stores as can small sturdy galvanized buckets, and smaller sized sprinkling cans that are balanced so that the child can actually sprinkle. The foregoing tips apply also to such things as full-sized rolling pins which should be well-weighted with good action; real eggbeaters (kept rust free so they do not jam); and flour sifters that actually sift. By giving children functional tools rather than shoddy toy facsimiles children can get the job done that they set out to do. They emerge with feelings of success, that "I can do it" feeling, rather than wandering off and leaving tasks undone with the accompanying feelings of failure or not being good at doing things.

Aesthetics

Materials should be pleasing to look at, to touch, to enjoy, and to live with on a regular basis. Appearance should not distract from appropriate use. A piece of climbing equipment with swinging appendages, hand holds, "port holes", and barber-pole striped uprights offers too many distractions. A young child may have great difficulty tuning out the distractors in order to concentrate on climbing competently and safely to the top and then back down. Other examples of aesthetics might be cited, too. The coverings on balls should be plain or very simple in design so that children, when learning to catch and to kick, can keep their "eye on the ball" and not on a dizzying design. Paint easels do not

need decorative designs on them to compete with what children are creating. Wall coverings should be cheerful, but subtle and preferable unpatterned so that childrens' paintings can be effectively mounted and displayed, and posters and pictures appealing to children can be hung. The same rules should apply to floor coverings which should be easily washable and subtle; children spend so much time creating projects of various kinds on the floor that they should be allowed full visual benefit of their own designs unhampered by background distractors.

Put quite simply materials for children should reflect basic good taste in design, color and texture. Emphasis should be on the simple, durable, uncluttered and under-decorated rather than the over-decorated, extreme and contrived.

Selection of materials

The principle we have just been discussing apply to design and appropriateness materials for all ages of children, infants through school age. The actual selection of materials can be made through comparative shopping in the various catalogues or by visiting toy stores and toy departments. A few of the toy manufacturers have display houses in major cities across the country where the materials can be appraised and purchased on the premises. Also, many of the manufacturers set up booths at the annual conferences of the major professional organizations where they demonstrate materials, offer catalogues and take orders. Another way to make decisions about what to buy, especially when initially equiping a preschool or when engaged in extensive refurbishing is to visit a well-equipped well-managed preschool or day care center. Valuable clues as to what to purchase can be obtained through seeing how children actually use the materials, noting which materials seem to lead to a variety of good child learning experiences, comparing the condition and appearance of the various materials.

It should be remembered that basic criteria for judging if a material is right is whether children use it often, appropriately, and with individual variations and elaborations. Exceptions to this rule can be seen, however. There are instances where a teacher may not care for a certain material. The occasional classroom can be found, for example, where the unit blocks, (to be discussed in detail in a subsequent section) do not appear to be used well or often. The teachers may report that their children do not care for blocks, or that several children within the group get too rowdy when they play with blocks. Such reports usually indicate one of two things: Either block play is not properly presented, or the children have not been helped to acquire block-building skills. In general, however, the amount and kind of child usage is almost always a good guide in the selection of preschool materials.

Basic Play Materials and Equipment

In most preschools and day care centers that provide for children appropriately there can be found certain types of materials that offer a variety of potential learnings. These materials will be discussed in terms of their basic function: 1) materials for exploration and manipulation, 2) materials for routines, and 3) materials for instruction. The materials in terms of usage are by no means mutually exclusive, however. For example, while washbasins are primarily for carrying out such routines as handwashing, they may also be the scene of spontaneous child-initiated exploration with water splashing or soap lathering. Such an activity is quite appropriate as long as it does not occur during the toileting transition, causing a bottle neck for other children intent upon getting washed and on to the next activity. Likewise, many preacademic materilas also do double duty. Lotto games, as discussed earlier, can be used by children to devise their own matching and categorizing games while teachers may use them in a much more structured fashion. For the pur-

poses of this discussion, however, let us look at the materials separately in terms of the three learning formats.

Materials for Exploration and Learning

Block area

The block area is one that is rich in many and various potentials for child learning. Therefore, blocks will be discussed in somewhat greater detail than will be possible for each type of material. It whould be remembered, however, that many of the points emphasized in describing the learning and skill acquisitions in block play apply in varying degrees to all of the other materials that will be touched upon.

Unit blocks, as we know them today were introduced during the very early days of the nursery school movement by Caroline Pratt who designated them for her City and Country School in New York City (Johnson, 1945). By definition a unit block is twice as wide as it is thick and twice as long as it is wide. All other blocks are either mutliples of the basic unit or are shapes that are functionally related in thickness, width, or length.

The following paragraphs suggest some of the learning experiences that blocks provide:

Large and fine motor skills - perceptual motor skills (visual, kinetic, tactual, eye-hand coordination, finger wrist dexterity) are practiced constantly as the youngest children stack blocks, lay them end to end, build simple bridges. As children develop, their block structures become more and more complex and delicately balanced, requiring increasingly higher skill levels from the child in all aspects of motor development.

Social skills - the block area offers opportunities for solitary, parallel, and cooperative play. Oftentimes a teacher will see all three types of play going on simultaneously among the several children in the area. Cooperative

play seems to flourish in block play, as children practice cooperative building, sharing, offering and taking suggestions from each other, and negotiating the "rules" they themselves establish: "Airplanes can't land on the signal tower. They land on the runway." For the shy child, blocks are a particularly nice play material. They offer an individual, non-competitive type of activity while keeping the child in proximity to other children. Rather than remaining isolated the child gradually comes to participate through "natural" contacts with the other children playing in the area.

Cognitive development

Blocks appear to be valuable in stimulating intellecutal growth. As teachers watch and listen to children engrossed in block building it becomes obvious that a variety of cognitive activities are going on: Memory, inquiry, reasoning, problem solving, generalization, discrimination, and concept-formation. As but one example, let us look briefly at the kinds of mathematical experience that children engage in during block building. Quantitative concepts, both numerical and non-numerical, become concrete:

"We need lots more long ones"

"I need three more--one for each side and one for the top"

"These aren't enough"

"It's gonna be as high as the sky."

Addition and subtraction go on all of the time, though not as the isolated process it becomes later in the elementary grades. When a child says, "Put two more blocks on top of this one; then we can put on a flat roof," that child has had a functional encounter with addition.

The related shapes of the blockes constitute another visual mathematical aspect. Triangles fit together to form rectangles or squares. A set of wedges fit together to form a perfect circle, giving wonderfully concrete demonstrations

of fractions and wholes, particularly meaningful as the children "discover" for themselves these elementary aspects of the basic structure of mathematics. Druing children's restoration of the area, such learning experiences can be continued as the teacher serves not only as the children's helper during block pick up but also finds ways to make the clean up as much fun as the building. Counting games can be devised by the teacher: "James, you carry four cylinders, Doug, you put away four triangles." Groups of blocks can be stacked 3 high and "barged" to the shelf, or the teacher can load the children's arms while teacher and child count. "1, 2, 3, 4. Come back soon for more." In between, the teacher can be getting blocks on the shelf so the task is not too onerous for the chidlren. However, it is important that children put the last few blocks on the shelves by themselves so that they gain the satisfaction of completing the task and enjoying the teacher's approval for a hard job well-done.

Creativity

Obviously, a great deal more could be said about the intellectual values of block play especially as related to other apsects of learning such as language development, concept formation and problem solving. For the moment, however, let us look briefly at the many ways that children's creativity is fostered through block play. As a creative arts material unit, blocks are especially useful because of their inherent design. Beauty of form, line, balance, and symetry (or asymetry) emerge as children build their structures. Engineering their own unique block buildings gives children a great sense of strength and confidence. Too, it provides opportunities for teachers to give children a great deal of positive feedback by remarking on a long road in the making or a structure of interesting design and balance.

Oftentimes children will want to "save" their buildings. Generally speaking, this may not be advisable, for the value of block building, as in

all creative activities for young children lies in the process rather, than on the product. Too, some children quickly learn to use "saving" as a ruse for avoiding pick-up. All rules are meant to be bent under special circumstances however, and there are times when saving the structure to show parents or to other significant adults is imp tant to a particular child it is one way to let that child know that his or her efforts are truly appreciated.

Accessories to block play

An attractive assortment of accessory items should be made available: small rubber or wooden animals; cars, trucks, planes and traffic signs; rubber or wooden people. Even such things as sea shells and pine cones can enrich and extend block play. Accessories should be neatly arranged on the shelves; again, not everything should be out at the same time. In fact, teachers should keep in reserve a number of attractive accessory items that they bring out as a special "extender" when block play is going well. A basketfull of brightly colored parquetry blocks, for example, can make lively "decorations" for a castle or a railroad station or an airplane beacon, and the addition of doll house furniture can extend block play into hitherto unexplored relationships.

Manipulative materials and table toys

Materials included in this category include such things as puzzles, pegs and pegboards, nesting towers, tiles for making mosaics, graduated "fit togethers," form boards, and beads to string, to name but a few of the materials in use in preschools across the country. Generally speaking, such materials are made available by arranging individual baskets or trays that are out on open shelves. Children select a material, carry it to a closeby table or floor space where they can work with the material either independently or with another child or two. When finished, the child disassembles the material and returns it to the

shelf before selecting another set of materials.

Whiren (1975) has done a thorough job of describing manipulative toys and their many contributions to child learning. The following material has been adapted from her excellent article. She suggests that manipulative toys might be thought of as falling into four separate categories: Materials for coordination, construction, reconstruction and classification. Each is thought to offer children somewhat different potentials for learning and skill development as will be discussed below.

Coordination materials: Sewing cards, lock and latch boxes, fastener boards (zipping, buttoning, lacing) and the classic "busy box," are a few examples. Such materials for fine motor activities, require practice on the part of the young child; that practice helps to develop dexterities that have practical value as he or she works concurrently toward acquiring a wide range of self-help skills.

Construction materials: Colored cubes, magnet boards, hammer and nail sets, parquetry blocks, leggo, rig-a-jigs compose only a brief listing of items in this category. These are the materials that are deliberately "open-ended" leaving children to explore space and form according to their own ideas. Whiren (p. 414) suggests that the most important learning from materials of this type is that children learn that they have complete control of the material, that their own action "determines the process and the product."

Reconstruction activities: Essentially these are the self-correcting materials that are to be taken apart and then returned to their original form: stacking and nesting cups, kitty-in-the-barrel, Montessori-type graduated cylinders, jig saw puzzles, and many others too numerous to mention. These toys run the gamut from very simple to highly complex; thus a match can be found for every skill level within a group of children. Yet, even the simplest

of these materials requires "visual memory, assessment of size, shape, color and function, persistance and motor coordination to complete the task." (p. 415).

Classification materials: Sorting, matching, grouping and patterning are the skills required in using these materials. Lotto games, parquetry or mosaic tile pattern boards, sequencing cards that form a story, pairs of texture samples are typical of such materials. Also, materials such as colored pegs and boards, wooden beads and the sets of one inch cubes can be used as classification materials, depending upon how they are presented. In fact, as noted earlier most of the materials in any of these categories can be used in more than one way depending upon teacher and child skill and ingenuity. What is important is that children have the opportunity to work with many different kinds of manipulative materials in order to develop the wide range of skills thought to underly subsequent academic performance.

Preacademic materials

In addition to these materials described above, that are often seen as prerequisites to formal education, there is another group of learning activities centered around what are often referred to specifically as academic materials. With an increasing societal demand for at least exposing young children to reading, writing and math activities in their very early years, manufacturers have responded to this consumer market with great quantities of materials aimed at teaching words and number concepts. There are magnetized letters and numbers to be used on metal boards, word and number bingo, word and number lotto, alphabet "worms," interlocking number boards, peg boards with forms to be filled in that follow number or letter shapes. By one count (in seven catalogues) there were more than 500 academic type materials advertised for use with preschool and kindergarten age children. Some of the materials were good; many were of questionable value and of questionable quality. Teachers must

make sure that they are not stampeded into investing in an overabundance of academic materials at the expense of providing children with the necessary array of materials that encourage multisensory manipulation.

Nevertheless, there does need to be a selection of good academic materials available in the preschool and day care setting--number and letter boards; classification, sequencing and patterning games; counting frames and other such materials. Many of the materials described earlier such as lotto are of great value as academic materials and can be used for both exploration and instructional activities.

Science center

"Sciencing" with young children requires considerable care and thought as to what kinds of materials to make available. Teachers can make many materials accessible for informal exploration: Magnets, magnifying devices, mechanical objects such as clockworks, drycell batteries, pieces of wire with alligator clips on each end, DC motors, and various types of switches and small light bulb sockets. There should also be inanimate objects from nature to examine, to take apart, to wonder, ask questions, and make inferences about, and to sort and group along various dimensions. Important, too, are opportunities to observe life processes: Growing, hatching, burrowing, and going dormant. Some affluent preschools have commercially elaborate guinea pig cages, thermostatically controlled egg hatching incubators, and scientifically constructed worm farms; in other classrooms the worm farm may be in a discarded gallon mayonnaise jar and the guinea pig in a cardboard box with shredded papers for a hideaway. Children appear to enjoy either mode of presentation.

Many science activities require direct teacher instruction: Seeds will not germinate and sprout within a reasonable time if planted two inches deep rather than ¼ inch deep and a chick incubator must be kept at perfect humidity

level day and night or the actual hatching can be an unnerving process for children and teachers. Children must be taught, too, through demonstration and direct instruction, how to handle classroom pets so that neither the animal nor the child has unpleasant experiences that make the animal cowering or aggressive, the child fearful or hurtful toward small animals.

To sum up, the key to good sciencing experiences with young children is the quantity, quality and appropriateness of the materials. Appropriateness is defined primarily as materials that children can manipulate, talk about, and investigate through various sensory modalities--sound, sight, taste, smell, touch. Furthermore, materials and concepts must not be so complex and abstract that they are incompatible with the child's cognitive and motor capabilities.

Book center

An extensive array of books nicely displayed, readily available to children, and changed frequently is one of the important staples in preschool and day care learning environments. A range of books is necessary--simple picture books with little or no text; books with a varying ratio of pictures to text; stories about families, workers, school, new babies, animals, seasons, holidays, and the many other every day events that comprise a child's world. Balance among the books should be sought in terms of realism, humor (outrageous as well as subtle), folk lore and tradition, poetry and rhyming, suspense and repetition. The picutres and drawings in children's books should have artistic merit and depict faithfully what the story is relating.

In addition, there should be special resource books available--high quality picture and text encyclopedias, science books, dictionaries and maps for children to peruse on the own, or for children and teachers to consult as together they search for information to answer children's questions. Good quality childrens magazines and other types of periodicals put out by various of the sci-

entific and conservation societies are also valuable. Flannel boards and boxes of story characters and scenery can be available on occasion too so children can do their own story telling and improvising.

The book area should be a place to display attractive pictures and posters. Such displays may be relevant to the seasons, to the particular interests of the children, or displayed primarily to please the eyes of children and teachers. A sufficient collection of such materials is needed so that the display does not become static, a wall that children cease to look at. Many public libraries have posters and pictures to lend; libraries also are usually willing to allow teachers to borrow fairly large numbers of children's books and reference materials for several weeks at a time. Even a low budget center can have their children's reading and visual materials refreshed frequently.

Creative arts center

Most of the materials that are purchased for the creative arts area are of the consumable type: Papers such as newsprint, mat, and slick finish for various painting activities; construction paper, tissue paper and other specialty types of paper for collage projects; burlap, yarn, fabric scraps and buttons for stitchery projects; paste, glue and other adhesives; paint, clay, chalk, magic markers, crayons. All creative arts materials need to be of good quality--papers that don't tear at the swipe of a brush; colors that are true and bright; clay that is free of rough extraneous materials, fabrics of a weave (such as burlap) upon which children can successfully wield a needle.

In addition to the consumable materials there are more permanent materials that should be selected with great care--paint brushes, scissors, brayers (hand rollers). All of these materials are expensive as an initial investment. However, with careful, daily attention they will last through many years of child use. Paint brushes for example should be washed thoroughly in cool water until

no color comes from the brush. Next the bristles should be shaped to their original form, and then the brush placed laterally across a container so the bristles are free to air dry from all directions. Even with the best of care inexpensive brushes (perhaps 1/3 the initial cost of the good brushes), will soon loose their bristles and become splayed and bent under children's normal usage. The number and kind of brushes represent a sizable investment too. Ideally there should be three sizes of brushes--ten or twelve that have bristles 1½ inches long and 3/4 to 1 inch wide (depending upon the age of the youngest children); a similar set but with considerably smaller bristles (bristles 1 inch long by 3/8 to ½ inch wide) for more experienced easel and mural painters, and finally a set of much more finely bristled brushes (some with delicate points) for those children who have developed a great deal of skill and interest in painting during their years in preschool or day care. Scissors too, must be of high quality. It is frustrating for a young child to be given scissors that chew and tear the paper, or move so stiffly (or loosely) that the child can gain no control or sense of mastery. Brayers are relatively inexpensive even when purchased in good art supply houses. They last for years with a modicum of good care as do high quality tempered steel tapestry needles (blunt points) and well-engineered, spring-loading embroidery hoops that will hold children's fabric tautly in place. A major goal of teachers, always, is to prevent children from experiencing frustration and failure because of shoddy, malfunctioning equipment.

Dramatic play

Furnishings in this area should be child sized: A doll bed (that a child can curl up in), a stove, sink, cupboards and chests of drawers are usually considered basic pieces. The furniture needs to be smoothly finished and well made so that the drawers and cupboard doors, and catches and knobs actually work. In

addition the pieces need to be sturdy and well-designed to prevent them from toppling over as the child attempts to open a door or drawer. In fact, a smooth finish, sturdiness and "operability" are the key words in all such equipment, be it a child-sized ironing board, doll buggy or stroller, carpet sweeper, broom, table and chair set, or rocking chair.

Dolls should be of good quality, totally immersible in water, with an ethnic representation typical of the community mix. In addition, many centers are now providing dolls with appropriate external genitalia (Young Children, 1981). Dolls should have simple clothing with which young children can have some degree of success when taking it off and putting it on. For very little children, velcro fasteners are ideal. The introduction of buttons and snaps in gradually increasing sizes, (and eventually laces and sashes) comes as children develop more highly coordinated motor skills.

Dress-up clothes for children need to follow the same principles. If derived from adult clothing, a garment needs to be shortened, tucked, or otherwise altered so that it stays on and the child is not tripping and falling over it at every turn. Male and female dress up clothes need to be equally well represented and both need to be fresh and appealing. Too often male clothing consists of little more than a couple of stained neckties and hats and a drab vest or two while the female clothing is frilly, bouffant and colorfully appealing.

The dramatic play area, however, should not always be devoted to housekeeping and family-related play. Thus, when selecting the furnishings it is well to limit the investment to a few good basic pieces that can be removed easily and at fairly frequent intervals so that props can be introduced that will motivate other kinds of dramatic play such as grocery store, shoe store, office, theatre, veterinary, green house, train or bus trips--whatever is relevant to the children's lives and interests at a particular time. Materials for

these kinds of dramatic play are usually based upon recombinations of existing equipment (hollow blocks and walking boards for counters) and various "found" materials used as props. ("Found materials will be discussed later.)

Outdoor equipment

Again, quality must be the watchword if outdoor play is to be safe and conducive to children learning successful control of their bodies. A number of guidelines underly the overall selection. Each piece, whether of wood, plastic, concrete or metal, should be solid, well-constructed, and free of sharp, rough, or splintery edges and corners. If it is a painted piece, the paint should be non-toxic. All pieces should be finished so as to withstand weather and hard usage. Finally, each basic equipment should stand securely by itself--as someone once said "the child should move, not the equipment."

Another consideration is the ease with which the portable equipment can be moved about. If a goodly portion of the outdoor equipment is movable, centers of interest can be varied. Oftentimes, a little-used piece, simply by changing its location or combining it with another piece, becomes popular again. Those pieces which must be permanently imbedded should have their location carefully thought out so that they will be an asset in the play yard and not a hinderence. For example, swings, if installed at all, should be off in a corner or in an out of the way spot. At least 10 feet of clear sapce must be allowed behind and in front of the swing frame. On the other hand, a high, complicated climbing frame should be placed centrally so that it can receive constant supervision.

Still another consideration is that all equipment should be simple, adaptable, and capable of serving more than one purpose. Young children need materials that demand that they do something, not glossy commercial products so often purchased because they are

eye-catching. In the latter category are the manufactured slides, gliders, teeter-totters, and merry-go-rounds discussed earlier. Children can do only what these pieces dictate. If they try to invent new methods of use:

the child or someone else usually gets hurt in the process. In addition, teachers are constantly having to interceed, telling the child exactly how to use the equipment and laying down strict rules. Little else is so destructive to the freedom and exploration basic to sound learning experiences for young children. Examples of the more suitable types of equipment for preschool play yards are listed below.

Packing Boxes. These should be constructed of ½" waterproof plywood. Good dimensions are 3' X 3' X 4' with one side open. All seams should be reinforced on the inside to give maximum stability and durability. These boxes are most attractive when painted in bright primary colors. For a group of 15 to 20 children there should be 3 or 4 of these packing boxes.

Lightweight Planks or Boards. The lumber should be straight-grained and of high quality to bear the weight of several children at a time. Boards must have bounce and resiliency and be light enouth in weight so that teachers can carry them about and also help children to position them as desired. Boards should be of varying lengths 6, 8, and 10 feet long. They should be securely cleated at each end and several of the middle-sized boards should be double-cleated in the middle for use as teeter-totters. All planks should be smoothly sanded, courners rounded, and finished in a high quality outdoor varnish.

Saw Horses. Two or three pairs of saw horses are sufficient for the average play yard. The heights should vary: One pair 8" high, another 12" high, another pair perhaps 24" high. These must be sturdily constructed and well-reinforced of either wood or metal. Pairs of saw horses form the

bases for walking boards, jumping boards, inclined ramps, teeter-totters, tables, or numerous other play activities tailored to the diverse needs of a group of preschoolers.

Ladders. Several ladders, lengths varying from 3 feet to 6 feet are good, standard equipment. One ladder, about 10 feet long, is also desirable. Some of the short ladders should be of metal with one end curved; these can be hooked in or out of packing boxes, hung from climbing frames--used in dozens of free-swinging ways. The wooden ladders should be cleated on each end so that they can be hooked securely to various pieces of equipment forming walk ways, suspension bridges, scaffolding, or whatever else the child's imagination dictates. One or two gangway ladders are an excellent addition to the collection. They allow the more timorous child or a child with motor dysfunctions to practice walking steep inclines and across high places with the security furnished by the handrails (Allen, 1980).

A Frames. Two pairs of A frames, one pair 4 feet high and another 5 or 6 feet high have multiple utility in a play yard. These can be of wood or metal but must be sturdy, broad-based and non-tipping. Used in combination with planks or ladders they serve dozens of play purposes. By themselves they are excellent climbing frames; draped with blankets, they become tents and hideways. Children and teachers are constantly finding new ways to use these simple but adaptable pieces of equipment.

Hollow blocks. Large outdoor hollow blocks are an expensive initial investment; however, given careful storage, good care and yearly refinishing, they last many years. For 15 to 20 children there should be no fewer than 50 or 60 blocks, 12 X 12 X 6 inches, and 12 X 18 X 6 inches. Two-year-olds pack them around, stack them, haul them in wagons, use them for stepping stones. Older children construct buildings and enclosures and

vehicles of every size, shape and description out of these blocks.

Barrels. Large and small barrels or kegs provide great delight to young children of all sizes and levels of development. A barrel or 50 gallon metal drum open at both ends invites crawling through, rolling around in, or rocking a friend in. A dozen or so small barrels (nail-keg size) combine with the hollow blocks to make elaborated structures or serve as tables, chairs, and stoves for impromptu outdoor housekeeping play.

Climbing Frames. One or two large climbing frames (depending upon space) are a nice addition to a play yard. One should be a simple arbor type which lends itself to all kinds of activities. Another good type of climber is the jungle gym or ladder box. These come in a variety of heights and designs and are used by children in many different ways. Such pieces are particularly adaptable to being combined with planks and other pieces of portable equipment for a variety of large motor activities.

Wheel toys. Every play yard should have a good collection of wheel toys. Four to 6 tricycles of 2 or 3 different sizes are enough for the typical group. Again, good quality and sturdy construction must be stressed. Tricycles need to be kept in perfect working condition at all times. A tricycle that will not steer properly is not only frustrating to a child but dangerous, too.

Two or three wagons and a couple of wheelbarrows are also desirable. Wheelbarrows are particularly demanding pieces of equipment in that their maneuvering requires that children develop very specific motor coordination. They do, however, provide an important challenge and children appear to be experience a great sense of attainment when they learn to handle a wheelbarrow successfully.

Gardening and digging tools. Rakes, shovels and trowels are also important.

As mentioned earlier, however they should not be the cheap little sets sold in toy departments; these are too breakable, too bendable. They only frustrate the child who tries to do a good job of digging or raking. On the other hand, adult-sized equipment is too unwieldy and thus conducive to accidents. Fortunately there are good, sturdy, medium-sized rakes and shovels of a size that 3-, 4-, and 5-year-olds can manage well. It is probably better that there be no digging tools at all (except smaller sturdy sand play shovels) until appropriate ones can be located. It should be added too that shovels and rakes require close and constant supervision; they so quickly convert into weapons when quarrels start up. Also, they cause accidents if left lying around so children must be taught to stand rakes and shovels upright and out of the way when they are through with them.

Accessory items. Finally, for outdoor play to lead to fresh, new, and highly creative learnings day in and day out, there should be a stock of accessory items. These may be such things as small cars, trucks and airplanes, balls and beanbags, innertubes and oil cans, lunch boxes, pieces of garden hose, blankets. Here, ingenuity is the teachers best resource--so many every day items serve children well in their play.

Woodworking

Woodworking is best done out of doors because of the excessive noise. Children who are otherwise engaged often find such noise disconcerting (as do teachers). If a separate wood working room is available and can be supervised, then woodworking does not need to be confined to the out of doors.

A commercial work bench of solid hardwood complete with vises is considered ideal by many teachers. Such pieces are exceedingly expensive and there are good alternatives such as a heavy old table with overhanging top (for securing

C clamps). Such a table can be cut down to about 24 inches in height. Very young children whose woodworking consists mostly of pounding can hammer on pieces of wood on the ground, or an old tree stump, log round, or railroad tie.

All tools used by children should be regular adult tools of good quality and appropriate size and weight. Toy tools are never appropriate--they will not do the job. Following is a brief inventory of woodworking equipment.

Hammers--small, well balanced, with bent claw and of sufficient weight (11 to 13 ounces) to provide plenty of force when swung lightly. It takes more, not less, strenght to work with a lightweight hammer.

Saws--either hand cross-cut, about 16 to 20 inches long, of good steel, kept very sharp.

Brace and Bit--should have a six to eight-inch sweep, wood bits come in six-teenths and are designated by number.

C Clamps or Vise--if the school does not have a commercial work bench with a built-in vise, several large, well-designed C clamps will be needed to hold wood steady while children saw or hammer.

Wood Rasp--with what is called "medium bite." This tool, instead of a plane, is recommended for children under six years of age. A ten-inch smoothing plane may be used after a child has acquired control and coordination, though it is recommended even then that the child use both hands on the tool and that the wood to be smoothed is securely anchored in a vise or C clamp.

Nails--of assorted sizes and lengths, very sharp, with good sized heads (roofing nails, and thick finishing nails are good). A trip to the hardware store to rummage through the bins and boxes will provide the necessary assort-ment.

Soft woods--assorted sizes and thicknesses should be selected for young chil-

dren's use. Woods that are hard, dense, compact, or those that are soft but have a heavy, coarse grain which splinters easily are almost impossible to work with. Children find such woods frustrating and discouraging to use.

Accessories--to use with wood are white glue; rulers, yardsticks and pencils; tacks, brads, screw eyes and hooks; assorted wires and string; washers, hinges, hasps, drawer knobs and handles; styrofoam, leather and cloth scraps; bottle caps and metal jar lids; easel paint and brushes. Also doweling 1½ inch or more in diameter can be sliced 1/2 to 3/4 of an inch thick and drilled in the center by an enterprising adult in order to supply the children with a nice assortment of "wheels."

Materials For Routines

If children are to become capable, confident and efficient in caring for their own possessions and mastering the many self-help skills that our society deems necessary, the preschool or day care center must be set up to make the acquisition of such learnings easy for children. Every child should have his or her own place to hang up clothing, and to store boots, mittens, hats, treasures and projects to be carried home. Individual "cubbies" or lockers that can be ordered through most equipment catalogues, are ideal. When these are too costly for a program, then individual child-height hooks should be available. An ideal arrangement is to have a shelf above or below the row of hooks with a plastic tub on the shelf for each child. The tub then serves as a drawer for loose items. The child's hook and tub should be immediately adjacent to each other and both should be labelled clearly with the child's name and perhaps identifying pictures.

As mentioned in an earlier section cupboards and shelves need to be child-height and readily accessible to play areas. Shelves that house materials of

multiple parts or dimensions such as unit blocks need to be compartmented. The shape of the block(s) to be stored in a particular compartment should be clearly outlined so that children are enabled to restore the area quickly and appropriately. Such things as tools and garden equipment can be hung by hooks on pegboard; again, an outline of each piece can be painted or traced upon the background. Wheel toys should have particular parking places, undercover, and spaced far enough apart so that children can remove and return the vehicles independently. Only as teachers exercise care in systematically arranging children's storage spaces can children be expected to learn to care for their own possessions and to develop concern for those materials and equipment that must be shared by many.

In designing (or redoing) environments aimed at helping children master routines independently, it is important that children be able to operate the equipment. Thus, faucets must respond to children's efforts (neither too rigid nor so loose the water comes gushing out unexpectedly), the water must not be too hot, toilets should have flushing apparatus that children can manage, and towel dispensers and papercup dispensers should be at child-height and functional, releasing only one towel or cup at a time rather than a cascade. Doorknobs and sliding doors, too, need to be of a kind that children can manage, except on those doors where children should not have free access. In these cases, the doorknobs should be placed well out of children's reach.

Materials for Instruction

At times certain materials are most appropriately used in an instructional format to teach and have particular children practice specific kinds of learnings. Many of the materials described under exploration materials are readily adaptable for instructional purposes. It has been noted that parquetry blocks and one inch colored cubes and pegs and pegboards, for example, can all be

used for a variety of instructional purposes. Which of the materials will be used and how they will be used are best left to individual programs and the way in which their curriculum is implemented. The important distinction in discussing materials for instruction is the role of the teacher. In contrast to exploration times, the teacher takes more of a lead role and presents the materials in a prearranged, structured fashion designed to promote specific learnings in specific children.

Science Materials

The science materials suggested under exploration can all be used for more formal science activities and the list can certainly be extended to include many such things as various weather devices: a weather vane, thermometers (indoors and out), rain gauge and animometer (these too can be used of course for exploration-type activities. As in using academic-type materials during instructional periods the teacher again takes on more of a lead role, perhaps demonstrating observation strategies along several dimensions; holding and turning the guinea pig gently so children can find and identify mouth and tail and feet and ears. The teacher also locates related books and articles, may read exerpts to the children, or help them to find answers in the resource materials.

In addition, teachers both independently and with children, make collections of materials - rocks, seeds, pinecones, sea shells, sink and float assortments, and living and non-living items for comparing, contrasting, manipulating, and inquiring about. Many sciencing materials can be made by teachers - a collection of securely capped bottles containing various scents, textured scraps of many kinds (fabric, sand paper, granular materials), and sound identifying experiences (horn, bell, mixer, baby crying) taped by the teacher for play back with children.

As in all instructional activities with young children, materials should offer children hands-on opportunities, though teachers in an instruction format are likely to demonstrate and carefully supervise children's explorations with various objects and materials. A material which requires children to sit passively by and watch teacher perform "miracles", with no first-hand involvement for the children, is not (except on the rarest of occasions) a suitable instructional activity.

Music

In a variety of informal ways, music should be a day-long component of a lively preschool or day care program. For the moment, however, let us look at it in terms of materials needed in the more structured, teacher-directed format. The most important resource of all is that teachers have a varied and extensive repertoire of songs and chants suitable for engaging children in singing and a variety of rhythmic activities. Many of these songs should be the "old favorites" that teachers and children and parents were brought up with: Working on the Railroad, Yankee Doodle, Twinkle Twinkle, Old MacDonald, Jingle Bells. Teachers, especially the less experienced, often report a nonexistent repertoire of songs. Yet, when they start to list how many songs they actually can sing, concentrating on the "old favorites," they are often pleasantly surprised at the extent of their repertoire. These, they can depend upon at first. Additional songs can be learned as the teacher goes along from the many excellent books available. If a teacher does not read music, then it is a simple matter / to learn songs from children's records, folk song recordings, from other teachers, and from the children and parents.

A chording instrument such as an autoharp or a good, well-stretched hand drum is useful in motivating rhythmic activities, especially in the many classrooms where no piano is available or where teachers do not play the piano or other musical instrument. Various musical instruments

should also be available for children's use -- rhythm sticks, maracas, drums, tambourines, triangles, bells. As with other tools and equipment, these should be authentic, functional instruments that can be tuned and kept in good repair so that children can produce sounds that have musical integrity in terms of sound, pitch, and volume.

A good record player and a varied collection of both children's records and folk and classical music should be available for intermittent use. However, the record player should never be the major component in the musical experiences that teachers provide for children. As mentioned earlier, in investing in equipment, it is best to buy a simple record player that children can be taught to operate. If a more complex and delicate machine is all that is available, (one that is easily harmed or put out of commission), then it should be placed out of children's reach with the clear understanding that it is to be used only by teachers.

As with all other materials that have been discussed, musical instruments need to be available for children to use during exploration periods too so that they may discover for themselves the properties of tone, volume, rhythm and melody. It is during instructional periods that teachers demonstrate appropriate usage and care of the various instruments and engage in the teaching of specific musical activities.

Language

Language learning experiences are an integral part of the young child's classroom experience throughout the entire day and incidentally are corollated with every activity. There are also times during the day (preacademics, music, story time) when focus is on language per se. The largest investment in language activities will be in providing an extensive collection of books of all types (as discussed in an earlier section). During instructional periods teachers use the books (and pictures and posters) to accomplish

particular goals: to increase span of attention, auditory perception (rhyming skills and phonics), questioning, and picture and story line matching. A parallel goal always is to increase children's overall enjoyment of stories and a sharing of the fun of reading with an adult who enjoys it too.

Many materials other than books can be used in an instructional format in fostering language skills in children: puppets of all types (both purchased and teacher or child-made), flannel boards, chalk board stories, and accessory items or simple props of various kinds to use in creatively dramatizing favorite stories. Many preschool board games and manipulative materials can also be used to extend and elaborate children's language skills. The discussion of lotto games in an earlier section is an example of such usage.

A primary typewriter, essentially for teachers' use or for children's use under varying degrees of teacher supervision can be a valuable adjunct to a classroom. Such a typewriter is especially useful in programs that include an unpressured early reading program for those children who evidence a marked desire to learn letters, words, and numerals (Goetz, 198). For these children, teachers also need to provide a variety of letter and word games and other materials such as ink stamp pads and sets of lower and upper case letters.

Self Help

Though children are practicing self-help skills in one way or another throughout the day, there are periods when teachers formally instruct certain children in specific skills. Thus, materials designed to teach lacing, zipping, buttoning, and tying are important as are various manipulative materials that teach turning, prying, opening and closing containers, snapping and fitting together. Many of the materials discussed under exploration are readily adapted to more formal instructional activities. In addition, the teacher may want to collect a variety of materials from kitchen and hardware stores or plumbing shops -- tongs, fasteners, door knobs, locks of various

kinds, pipes and other plumbing accessories.

There also should be materials to teach such things as pouring (small, well-balanced pitchers and clear plastic glasses so children can pour "up to the line"); squeezing and wringing (sponges and clothes); spooning (transferring various materials, colored water, corn meal, beans from one bowl to another); folding and stacking. Thus, when children encounter activities during routines and exploration times that require specific skills -- pouring juice at snack time, folding and putting away dress-up clothes in the housekeeping area, wiping up the clay table -- they have the opportunity to practice skills in which teachers have already helped them to gain some proficiency.

Enrichment Activities

Many special activities, so conducive to a wide range of important learnings in young children require, by their very nature, a great deal of teacher instruction, demonstration, and supervision if preschool children are to be active, safe, and successful participants. Cooking experiences fall into this category as does woodworking, to mention but two such activities. In both instances, the equipment itself is potentially hazardous (hot plates, crock pots, chopping knives, hammers, saws), yet all can be used successfully and safely by children when two basic arrangements are made. One, the equipment must be of good quality, functional (not toys), and in good working order. Two, teachers must instruct children in the use of the equipment by modeling correct usage and providing constant supervision and positive feedback throughout the entire activity.

Holiday activities, special visitors, and excursions away from school often require special materials and equipment -- perhaps birthday candles and a special song; pen or cage for a visiting animal; a driver's emergency list, change of clothing, and first aide for excursions. Again, teachers' instructions are most important in such situations. "Only Charles and

Charles's mother pick up the puppies. It makes the mother dog nervous if other people do it. The puppies will be brought around and each of you will get to hold a puppy on your lap"; or, "We are having a visitor who plays the violin. After we listen awhile he will play something we can jump and clap to."

Too often enrichment activities and special occasions result in frustration and chaos for all, thus interferring with the potential learnings inherent in special events. Breakdowns need not occur if teachers systematically plan for all of the necessary components in advance and then carefully instruct and supervise children in carrying out the activity.

Found Materials

Quality materials of great potential usefulness are often available as throw-aways or give-aways from wholesale houses, retailers, craft shops, cabinetworks, and various industries. It does take time to scavenge or salvage such materials but often the products are well worth the effort. Such things as wallpaper and fabric swatch books; tile, carpeting, and wall board samples; ornate and decorative paper scraps from greeting card manufacturers and print shops; ~~lovely~~ wood scraps and shavings from cabinet shops can be put to a multiplicity of uses by ingenious teachers and children. Telephone dials (sometimes the telephones themselves), brightly colored wires, pipe fittings, and lengths of hose may also be available for little or nothing.

Salvage stores are often good places to find at very little cost dress-up clothes and various "props" such as lunch buckets, steering wheels, oil cans, and muffin tins. And, of course, the "trash" and spring cleaning throw-aways from the average home offers a veritable treasure trove for preschool learning activities -- unstained plastic meat and vegetable trays of all sizes and color, berry baskets; plastic containers with lids, plastic squeeze, spray, and pump bottles, sewing scraps and notions, hats, purses, jewelry,

baby food jars with lids, greeting cards, used gift wrap and ribbons are but a few of the reusable and recycleable items that are readily available as trash pouring out of the average home.

Nature, too, provides all kinds of materials that can be put to use in providing children with many kinds of learning activities -- seed pods, stocks of grains and grasses, shells, feathers, abandoned bird nests, rocks of all kinds, lichen, mosses and fungi, swamp creatures, autumn leaves -- again, the list could go on and on. Fresh fruits and vegetables (both cooked and uncooked) are also excellent materials for learning through touch, smell, taste, and texture.

A note of caution is in order, however, in collecting found materials -- they tend to pile up, become disorganized, lie around or spill out of dusty cartons. When this happens, the "beautiful junk" becomes instead unbeautiful clutter. A pile of tires lying in disarray in a corner of the play yard that no child has gone near for months probably needs to be hauled to the dump. A box of costume jewelry, all tangled and essentially unsortable, should not be taking up valuable storage space. As in every other type of materials used for children's learnings, found materials, too, must undergo periodic evaluation as to their suitability.

Summary

One major responsibility of teachers in preparing an optimum learning environment for young children is to provide many types of materials so that children, during the large blocks of exploration time each day may choose for themselves how to elaborate their own skills in each area of development. In addition, teachers must select materials that can be used for helping children learn routines, and materials that are appropriate for learning activities in an instructional format. The principles for selecting materials for any

age child (including infancy) and for any type of learning activity are essentially the same -- appropriateness (developmental match) versatility, variety, safety, function, durability and aesthetic qualities.